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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/784,045

02/20/2004

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10/24/2007

EXAMINER

MOORE, MARGARET G

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

10/24/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/784,045	<b>Applicant(s)</b> MEADOR ET AL.	
	<b>Examiner</b> Margaret G. Moore	<b>Art Unit</b> 1796	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 August 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 41 to 49, 51 to 64, 66 to 82, 84 to 95 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 89 is/are allowed.
- 6) ☒ Claim(s) 41 to 43, 48, 49, 52 to 59, 63, 64, 67 to 77, 81, 82, 85 to 88 and 90 is/are rejected.
- 7) ☒ Claim(s) 44 to 47, 51, 60 to 62, 66, 78 to 80, 84 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/20/07 has been entered.

2. In view of the Declaration filed 8/20/07, applicants have successfully antedated the Babich et al. reference. Please note the following new grounds of rejection, which were discovered during an updated review of the prior art.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 41, 48, 49, 53, 57, 63, 64, 71, 75, 81 and 82 are rejected under 35 U.S.C. 102(e) as being anticipated by Lin et al.

Lin et al. teach patternable low dielectric materials containing silsesquioxane monomers. The so called "caged" structures are highly preferred. See for instance column 5, lines 43 and on. Note the various functional groups shown on column 6, many of which include an alcohol functional group. Particular attention is directed to Examples 1 and 2, which make a POSS compound having an alcohol functionality. Note too Example 8. This prepares a composition containing a solvent, a POSS having an alcohol group, a crosslinking agent and a catalyst. This anticipates claim 41. The crosslinking agent meets the requirement of claim 49. The silicon wafer meets the substrate of claim 57. This anticipates the instant claims.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 52, 67 and 85 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lin et al.

This reference fails to teach a spin bowl compatibility test result; however, the composition claimed is the same composition as found in Lin et al. Products of identical chemical composition can not have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. If applicants are of the position that the prior art does not, in fact, possess the same properties as the claimed composition, the claimed composition should be amended to distinguish itself from the prior art. This rejection is made as a 102/103 rejection since the spin bowl compatibility test result would appear to be inherently met by the teachings in Lin et al.

7. Claims 54 to 56, 68 to 70, 72 to 74, 86 to 88 and 90 rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al.

For claim 54, note that column 1, lines 55 and on, disclose that the various layers of patterning materials include an antireflective coating. From the skilled artisan would have found the presence of an antireflective layer in the layered substrate of Lin et al. to have been obvious.

For claims 55 and 90, the Examiner notes that column 2, lines 45 and on, teach that the layer therein can be used as an interlevel or intralevel layer. It goes on to teach that a separate photoresist layer is not necessary. While the presence of a separate layer is not a preferred embodiment, patentees are not limited to their preferred embodi-

ment. The fact that a separate layer is not needed would provide the skilled artisan with motivation to include a separate photoresist layer, at the least in an effort to determine if operable and/or preferable results occur in the absence of such a layer or if, in fact, such a layer is necessary. A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments

For claim 68, note that column 22, lines 26 to 29, teach a thickness range that overlaps with that claimed. Since the skilled artisan would have been motivated to select a thickness anywhere within the disclosed range, the claimed thickness would have been obvious.

Also, adjusting the thickness of the photoresist layer would have been within the skill of the ordinary artisan.

8. Claims 41, 42, 48, 53, 58, 63, 71, 76 and 81 are rejected under 35 U.S.C. 102(e) as being anticipated by Nguyen et al.

Nguyen et al. teach organic-inorganic hybrid photocurable compositions that contain a reactive silsesquioxane (POSS). Of particular importance in this rejection is the breadth of the term "solvent system". While Nguyen et al. do not teach a solvent in the traditional sense, all of the components are dissolved, indicating that at least one of the components therein function as a solvent. See column 5 which teaches various POSS compounds having an alcohol functional group. The POSS 2020 used in column 6 includes a functional hydroxy group. This POSS meets that required by the claims and since the composition is in a dissolved state, the composition can be considered to be in a solvent system. The compositions in Column 6 include catalysts and crosslinking agents. This anticipates claims 41 and 48. For claim 42, note the POSS on column 5, lines 55 to 58, which contain hydroxypropyldimethylsilyloxy groups.

9. Claims 52, 67 and 85 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nguyen et al.

See the rejection rationale detailed in paragraph 6, *supra*, as it applies.

10. Claims 43, 54 to 57, 59, 68 to 70, 72 to 75, 77, 86 to 88 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al.

For claim 43, patentees do not specifically show a POSS compound having all R hydroxypropyldimethylsilyloxy groups but in view of the fact that such groups are possible as R groups and all the R groups can be the same, the skilled artisan would have found such a POSS compound to have been obvious. Note that the only difference between the POSS compound on column 5, lines 55 to 58, and that claimed is that the prior art POSS has 7 rather than 8 of such functional groups.

Nguyen et al. do not specifically teach an anti-reflective coating or a photoresist layer, but one having ordinary skill in the art would recognize that such layers are conventional in substrates used in a lithographic process. As such the skilled artisan would have found such layers to have been obvious in a substrate used for stereolithography as found in Nguyen et al. In this manner claims 54 to 56 would have been obvious.

Since the composition in Nguyen et al. is used in stereolithography, the skilled artisan would have used a conventional base substrate as the object upon which the composition is deposited. Many of the substrates in claim 57 are those that are commonly used in the preparation of such objects, for instance silicon or glass substrates. As such the selection of such a substrate would have been obvious to the skilled artisan.

11. De et al. is cited as being of general interest. This reference fails to teach or suggest a crosslinking agent. Gonsalves is cited as being of general interest. This reference fails to teach or suggest an alcohol functional group. Gronbeck et al. and Angelopoulos et al. are cited as being of general interest. Neither teaches a POSS compound. Generally the silsesquioxane used in these compositions are generic to the POSS compounds but there is not enough direction from the prior art to lead the skilled artisan to select a POSS compound. For instance, the molecular weight ranges in Angelopoulos (column 5, lines 17 to 20) and Gronbeck et al. (column 16, lines 59 to 61;

Art Unit: 1796

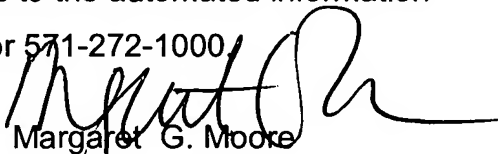
working examples) suggest 1) a polymeric compound rather than a monomeric POSS compound and 2) a larger compound than a POSS.

12. Claim 89 is allowed.

13. Claims 44 to 47, 51, 60 to 62, 66, 78 to 80 and 84 are objected to as being based on a rejected base claim but containing allowable subject matter.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Margaret G. Moore whose telephone number is 571-272-1090. The examiner can normally be reached on Monday and Wednesday to Friday, 10am to 4pm.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Margaret G. Moore  
Primary Examiner  
Art Unit 1796

mgm  
10/22/07